

REMARKS

Claims 1-29 are pending in this application. Claim 22 is objected to for informalities. Claim 26 is rejected under 35 USC 102 as being anticipated by Jaekle, US Patent Number 4,037,526 ("Jaekle"). Claims 1-25 and 27-29 are rejected under 35 USC 103 as being unpatentable over Jaekle in view of Bessler et al, US Patent Number 5,561,602 ("Bessler").

Claim 5 has been cancelled.

Claims 6, 8, 9, 10, previously depending, respectively, from claim 5, have been amended solely to provide proper dependency as a result of canceling claim 5.

Claim 22 has been amended to correct for informalities.

With regard to the rejection of claim 26 under 35 USC 102, claim 26 recites a method of "configuring a locomotive in a train in preparation for exit of the locomotive from a tunnel" that includes the limitations of "determining the current operating condition of the locomotive while in the tunnel; determining a desired set of operating conditions for the locomotive as the train exits the tunnel; determining the time or distance for the locomotive to reach the exit from the tunnel; and changing the performance characteristics of the locomotive to attain the desired set of operating conditions within the time or distance for the locomotive to reach the tunnel exit." Accordingly, claim 26 calls for determining an operation condition of a locomotive traveling in a tunnel and adjusting the performance characteristics of the locomotive as the locomotive approaches an exit of the tunnel. None of these steps are taught or suggested by Jaekle.

In contrast to determining an operation condition of a locomotive traveling in a tunnel and adjusting the performance characteristics of the locomotive, Jaekle describes a train tunnel ventilation method using a tunnel exit cover selectively positionable over the exit responsive to the train activating switches located up-track of the exit. See for example, Jaekle, Column 2, lines 8-19. Nowhere does Jaekle teach or suggest determining operation conditions of a locomotive or configuring operation of a locomotive of the train. Moreover, by describing operation of a tunnel exit cover responsive to switches activated by a train, Jaekle teaches away from the steps recited in claim 26. Accordingly, Jaekle fails to support a rejection of claim 26

under 35 USC 102. Therefore, claim 26, and claim 28 depending therefrom, are believed to be in condition for allowance.

With regard to the rejection of claim 1 under 35 USC 103, claim 1 has been amended to highlight patentable aspects of the invention that may not have been fully appreciated. Accordingly, amended claim 1 includes a method of controlling passage of a train employing a plurality of locomotives through a tunnel so as to meet an overall movement plan for the train" that includes the limitations of "monitoring conditions within the tunnel and the performance of the selected locomotive as the train passes through the tunnel, including dynamically changing the configuration of the operating characteristics of the selected locomotive as a function of the monitored conditions within the tunnel and the performance of the selected locomotive while in the tunnel, so as to achieve a total tractive effort of the train provided by the plurality of locomotives of the train sufficient to move the train through the tunnel in accordance with the plan and to optimize the performance of the locomotive." In essence, claim 1 calls for monitoring conditions in a tunnel and controlling an operation of a locomotive of a train during traversal of the tunnel to achieve an overall tractive effort of the train to meet a movement plan for the entire train. Neither Jaekle nor Bessler, alone or in combination, teach or suggest these features.

In contrast to controlling a locomotive of a train for traveling through a tunnel to meet an overall train movement plan, Jaekle describes a train tunnel ventilation method using a tunnel exit cover selectively positionable over the exit responsive to the train activating switches located up-track of the exit. Nowhere does Jaekle teach or suggest configuring operation of a locomotive of the train. Moreover, by merely describing operation of a tunnel exit cover responsive to switches activated by a train, Jaekle teaches away from the steps recited in claim 1. Bessler fails to remedy these shortcomings. Bessler describes a method for providing increased cooling and deration of a locomotive when traversing a tunnel. See, for example Bessler, column 5, lines 40-67 and column 6 lines 1-46. Nowhere does Bessler teach or suggest "controlling passage of a train employing a plurality of locomotives through a tunnel so as to meet an overall movement plan of the train...by monitoring conditions within the tunnel and the performance of the selected locomotive [and] changing the configuration of the operating characteristics of the selected locomotive as a function of the monitored conditions ... and the performance of the selected locomotive ... so as to achieve a total

tractive effort of the train provided by the plurality of locomotives of the train sufficient to move the train through the tunnel in accordance with the plan.” Moreover, by describing controlling operation of single locomotive when traversing a tunnel, Bessler teaches away from controlling an operation of selected locomotives of a train during traversal of a tunnel to achieve a total tractive effort of the train to meet an overall movement plan.

Furthermore, there is no motivation to combine the respective teachings of Jaekle and Bessler as suggested in the Office Action to arrive at the present invention. Jaekle, directed to a train tunnel ventilation method, provides no teaching or suggestion for controlling operation of a locomotive traversing a tunnel. Conversely, Bessler, directed to control of a single locomotive traversing a tunnel, provides no teaching or suggestion for controlling train tunnel ventilation at an exit a tunnel. For all the above reasons, neither Jaekle nor Bessler, alone or in combination supports a rejection of claim 1 under 35 USC 102. Therefore, claim 1, and claims 2 and 3 depending therefrom, are believed to be in condition for allowance.

With regard to the rejection of claim 4 under 35 USC 103, claim 4 has been amended to highlight patentable aspects of the invention that may not have been fully appreciated. Accordingly, amended claim 4 includes a method of “configuring a locomotive of a train comprising a plurality of locomotives in preparation for passage of the locomotive through a tunnel so as to meet an overall movement plan for the train” that includes the limitation of “the locomotive is one of a plurality of locomotives comprising a consist and the method includes changing the operating conditions of each locomotive in the consist to a desired set thereof prior to each locomotive reaching the tunnel entrance effective to meet a movement plan for the train while traversing the tunnel. Accordingly, claim 4 calls for controlling an operation of locomotives of a consist of a train in preparation for entering a tunnel to meet an overall movement plan for the train during traversal of the tunnel. Neither Jaekle nor Bessler, alone or in combination, teach or suggest these features.

In contrast to controlling an operations of locomotives in a consist of a train in preparation for entering a tunnel, Jaekle describes a train tunnel ventilation method using a tunnel exit cover selectively positionable over the exit responsive to the train activating switches located up-track of the exit. Nowhere does Jaekle teach or suggest configuring operation of a locomotive of the train. In particular, by merely describing operation of a tunnel exit cover responsive to switches activated by a train, Jaekle teaches away from the steps

recited in claim 4. Bessler fail to remedy these shortcomings. Bessler describes a method for providing increased cooling and deration of a locomotive when traversing a tunnel. Nowhere does Bessler teach or suggest "changing the operating conditions of each locomotive in the consist to a desired set thereof prior to each locomotive reaching the tunnel entrance effective to meet a movement plan for the train while traversing the tunnel." Moreover, by describing controlling operation of single locomotive when traversing a tunnel, Bessler teaches away from controlling operations of locomotives of a consist of a train to meet a movement plan for the whole train during traversal of the tunnel.

Furthermore, there is no motivation to combine the respective teachings of Jaekle and Bessler as suggested in the Office Action to arrive at the present invention. Jaekle, directed to a train tunnel ventilation method, provides no teaching or suggestion for controlling operation of a locomotive traversing a tunnel. Conversely, Bessler, directed to control of a single locomotive traversing a tunnel, provides no teaching or suggestion for providing train tunnel ventilation. For all the above reasons, neither Jaekle nor Bessler, alone or in combination supports a rejection of claim 4 under 35 USC 102. Therefore, claim 4, and claims 6, 8, 11, 12, 14, 15, and 16 depending therefrom, are believed to be in condition for allowance.

Claim 7 depends from claims 4 and 6 and incorporates all the elements of claims 4 and 6. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 4, 6, and 7 is not taught in the cited prior art. Furthermore, claim 7 includes the limitations of "the desired set of operating conditions for each locomotive comprises the tractive effort of other locomotives in the consist." Neither Jaekle nor Bessler, alone or in combination teach or suggest these limitations. For all the above reasons, claim 7 is believed to be in condition for allowance.

Claim 9 depends from claim 4 and incorporates all the elements of claim 4. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 4 and 9 is not taught in the cited prior art. Furthermore, claim 9 includes the limitation of "adjusting the performance of each locomotive is controlled by a computer on one of the locomotives which controls an operation of each of the locomotives." Neither Jaekle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 9 is believed to be in condition for allowance.

Claim 10 depends from claim 4 and incorporates all the elements of claim 4. As described above, neither Jackle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 4 and 10 is not taught in the cited prior art. Furthermore, claim 10 includes the limitation of "adjusting the performance of each locomotive is controlled by remotely monitoring the current operating conditions of each locomotive and transmitting a control signal to each locomotive to adjust its performance to the desired set of operating conditions." Neither Jackle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 10 is believed to be in condition for allowance.

Claim 13 depends from claim 4 and incorporates all the elements of claim 4. As described above, neither Jackle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 4 and 13 is not taught in the cited prior art. Furthermore, claim 13 includes the limitation of "determining the time or distance of the locomotive relative to the tunnel entrance includes accessing a track map database stored on the locomotive, the database including information on anticipated conditions within the tunnel." Neither Jackle nor Bessler, alone or in combination, teach or suggest this limitation. For all the above reasons, claim 13 is believed to be in condition for allowance.

With regard to the rejection of claim 17 under 35 USC 103, claim 17 includes a "method of controlling passage through a tunnel of a train employing a plurality of locomotives including a lead locomotive and at least one trailing locomotive so as to meet a movement plan" that includes the limitations of "monitoring conditions within the tunnel; monitoring the performance of each trailing locomotive as the train passes through the tunnel; and dynamically changing the configuration of the operating characteristics of each trailing locomotive as a function of the monitored conditions within the tunnel and the current performance of each trailing locomotive while in the tunnel, so to achieve tractive effort sufficient to move the train through the tunnel in accordance with the plan." Accordingly, claim 17 calls for monitoring tunnel conditions and controlling an operation of trailing locomotives of a train based on the monitored tunnel conditions and monitored locomotive performance during traversal of tunnel to achieve an overall tractive effort of the train to meet a movement plan of the train. Neither Jackle nor Bessler, alone or in combination, teach or suggest these features.

In contrast to controlling a locomotive of a train through a tunnel to meet a train movement plan, Jackle describes a train tunnel ventilation method using a tunnel exit cover selectively positionable over the exit responsive to the train activating switches located up-track of the exit. Nowhere does Jackle teach or suggest configuring operation of a locomotive of the train. Moreover, by merely describing operation of a tunnel exit cover responsive to switches activated by a train, Jackle teaches away from the steps recited in claim 17.

Bessler fails to remedy these shortcomings. Bessler describes a method for providing increased cooling and deration of a locomotive when traversing a tunnel. Nowhere does Bessler teach or suggest "monitoring conditions within the tunnel...and dynamically changing the configuration of the operating characteristics of each trailing locomotive as a function of the monitored conditions within the tunnel ... so to achieve tractive effort sufficient to move the train through the tunnel in accordance with the plan." Moreover, by describing controlling operation of single locomotive when traversing a tunnel, Bessler teaches away from controlling an operation of a trailing locomotive of a train during traversal of a tunnel to meet a movement plan for the train.

Furthermore, there is no motivation to combine the respective teachings of Jackle and Bessler as suggested in the Office Action to arrive at the present invention. Jackle, directed to a train tunnel ventilation method, provides no teaching or suggestion for controlling operation of a locomotive traversing a tunnel. Conversely, Bessler, directed to control of a single locomotive traversing a tunnel, provides no teaching or suggestion for providing train tunnel ventilation. For all the above reasons, neither Jackle nor Bessler, alone or in combination supports a rejection of claim 17 under 35 USC 102. Therefore, claim 17, and claim 18 depending therefrom, are believed to be in condition for allowance.

Claim 19 depends from claim 17 and incorporates all the elements of claim 17. As described above, neither Jackle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 17 and 19 is not taught in the cited prior art. Furthermore, claim 19 includes the limitation of "the locomotive comprises an engine and the monitoring includes measuring parameters indicative of the level of oxygen available for combustion by the locomotive engine at at least one location within the tunnel." Neither Jackle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 19 is believed to be in condition for allowance.

Claim 20 depends from claims 17 and 19 and incorporates all the elements of claims 17 and 19. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 17, 19 and 20 is not taught in the cited prior art. Therefore, claim 20 is believed to be in condition for allowance.

Claim 21 depends from claims 17, 19 and 20 and incorporates all the elements of these claims. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 17, 19, 20 and 21 is not taught in the cited prior art. Furthermore, claim 21 includes the limitation of "extrapolating from the measured values, oxygen availability and tunnel temperature at intermediate locations within the tunnel." Neither Jaekle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 21 is believed to be in condition for allowance.

Claim 22 depends from claim 17 and incorporates all the elements of claim 17. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 17 and 22 is not taught in the cited prior art. Furthermore, claim 22 includes the limitation of "wherein configuring the locomotive for passage through the tunnel includes sensing an ambient temperature change which occurs when the locomotive enters the tunnel whereby the locomotive can be configured for passage through the tunnel even if the entrance to the tunnel cannot be determined prior to the locomotive entering the tunnel." Neither Jaekle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 22 is believed to be in condition for allowance.

Claim 23 depends from claims 17 and 18 and incorporates all the elements of these claims. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 17, 18, and 23 is not taught in the cited prior art. Furthermore, claim 23 includes the limitation of "wherein the monitoring the performance of each trailing locomotive includes measuring the tractive effort of each locomotive." Neither Jaekle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 23 is believed to be in condition for allowance.

Claim 24 depends from claims 17, 19, 20 and 21 and incorporates all the elements of these claims. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 17, 19, 20, 21 and 24 is not taught in the cited prior art. Furthermore, claim 24 includes the limitation of "derating a locomotive if available

oxygen within the tunnel decreases.” Neither Jaekle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 24 is believed to be in condition for allowance.

Claim 25 depends from claim 17 and incorporates all the elements of claim 17. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 17 and 25 is not taught in the cited prior art. Furthermore, claim 25 includes the limitation of “wherein dynamically changing the operation of a trailing locomotive includes adjusting locomotive operating characteristics as a function of at least one of oxygen availability, tunnel length, grade, total load, air flow, and altitude.” Neither Jaekle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 25 is believed to be in condition for allowance.

Claim 27 depends from independent claim 26 and incorporates all the elements of claim 26. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 26 and 27 is not taught in the cited prior art. Furthermore, claim 27 includes the limitation of “the locomotive comprises an engine having a cooling system and traction motors having cooling systems, and changing the locomotive performance characteristics includes adjusting at least one of the temperature the locomotive traction motor cooling systems and the tractive effort of other locomotives in the train.” Neither Jaekle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 27 is believed to be in condition for allowance.

Claim 29 depends from claim 26 and incorporates all the elements of claim 26. As described above, neither Jaekle nor Bessler, is believed to be a valid reference. Accordingly, the combination taught by claims 26 and 29 is not taught in the cited prior art. Furthermore, claim 29 includes the limitation of “determining the time or distance for the locomotive reach the exit includes accessing a track map database maintained on the locomotive.” Neither Jaekle nor Bessler, alone or in combination teach or suggest this limitation. For all the above reasons, claim 29 is believed to be in condition for allowance.

Reconsideration of the amended application in light of the above Remarks and allowance of claims 1-4 and 6-29 are respectfully requested.

Respectfully submitted,



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